

REMARKS

Claims 14-35 are pending in this application. Applicant submits that these claims are allowable for the reasons discussed below.

In items 1 and 2 on page 2 of the Office Action, claims 14-35 are rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. The Examiner takes the position that the originally filed specification does not state that a portion of the side face extending for a height of a scroll wrap is machined at one time, or that the entirety of a side face of a scroll wrap is machined in one pass, as recited in claims 14 and 28. Applicant respectfully disagrees with these assertions.

The specification, on page 11, line 13 through page 13, line 13, describes in depth the process of Hale-machining side faces of wraps 1B and 2B. For example, on page 11, lines 19-22, the specification states that Hale-machining is performed by moving the non-rotational tool 9 along the longitudinal direction of wraps 1B and 2B while being set to the subjects to be Hale machined, such as side face 1C. The specification, on page 11, line 27 through page 12, line 10, further states that because the non-rotational tool 9 is longer than raised part height H of wraps 1B and 2B, the non-rotational tool 9 can be set at any point within raised part height H of wraps 1B and 2B. In other words, because the non-rotational tool 9 is longer than raised part height H, a portion of a side face of a wrap may be machined or the entirety of a side face of a wrap may be machined. Furthermore, on page 13, lines 10-13, the specification states that Hale-machining of a side face of a wrap is preferably performed one time. For at least these reasons, Applicant submits that the Hale-machining feature as recited in claims 14 and 28 is supported by the specification. Accordingly, Applicants respectfully request that the rejection be reconsidered and withdrawn.

In items 3-6 on pages 3-8 of the Office Action, claims 14-20, 22-26 and 28-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bishop (WO 89/08522). This rejection is respectfully traversed.

With exemplary reference to present drawing Figures 1-3, independent claim 14 sets forth a method for machining a scroll wrap, comprising: forming a stationary scroll 1 having an

end plate 1A and a scroll wrap 1B extending from the end plate 1A thereof, the scroll wrap 1B of the stationary scroll 1 having a side face 1C, forming a slewing scroll 2 having an end plate 2A and a scroll wrap 2B extending from the end plate 2A thereof, the scroll wrap 2B of the slewing scroll 2 having a side face 2D, the side face 1C of the stationary scroll wrap 1B and the side face 2D of the slewing scroll wrap 2A are configured to slide with respect to each other in use; and Hale-machining the side face 1C/2D of one of the stationary scroll wrap 1 and the slewing scroll wrap 2 by moving along a longitudinal direction of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B a non-rotational blade 9 such that machined at one time is a portion of the side face 1C/2D, of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B, extending substantially for a height of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B.

Importantly, claim 14 specifically requires Hale-machining the side face 1C/2D of one of the stationary scroll wrap 1 and the slewing scroll wrap 2 by moving along a longitudinal direction of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B a non-rotational blade 9 such that machined at one time is a portion of the side face 1C/2D, of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B, extending substantially for a height of the one of the stationary scroll wrap 1B and the slewing scroll wrap 2B. Bishop would not have suggested this feature.

Contrary to claim 14's requirement of machining at one time a portion of a side face, of one of a stationary scroll wrap and a slewing scroll wrap, extending substantially for a height of the one of the stationary scroll wrap and the slewing scroll wrap, Bishop discloses a method of machining a scroll wrap that includes cutting only a part of a side face of a wrap, and repeating the cutting step multiple times (see, e.g., Figs. 5-7 and 12, and page 4, line 26-page 5, line 13).

Furthermore, regarding the Examiner's assertion on page 6 of the Office Action that Applicant's specification does not disclose that a portion of the side face extending for a height of a scroll wrap is machined at one time, Applicant respectfully disagrees with this assertion for the reasons presented above with respect to the § 112, first paragraph rejection.

Additionally, Applicant notes that in rejecting claim 14, the Examiner concedes that Bishop fails to disclose Hale-machining as required by claim 14. Nonetheless, the Examiner

asserts that it would have been obvious to one of ordinary skill in the art to have machined at one time a portion of a side face, of one of a stationary scroll wrap and a slewing scroll wrap, extending substantially for a height of the one of the stationary scroll wrap and the slewing scroll wrap. The Examiner also asserts that because Bishop discloses that end milling is performed in one pass, it would have been obvious to one of ordinary skill in the art to have tried machining at one time the entirety of the side surface of either one of the stationary scroll wrap or slewing scroll wrap extending the height of the wrap. Applicant respectfully traverses this obviousness rejection on the following grounds.

Bishop teaches away from machining at one time a portion of a side face, of one of a stationary scroll wrap and a slewing scroll wrap, extending substantially for a height of the one of the stationary scroll wrap and the slewing scroll wrap. Bishop notes that engaging a cutter with a wrap that extends the full length of the wrap, and milling the wrap with one pass of the cutter produces considerable side forces during machining that lead to deflection of the wrap at its outer end (see, e.g., page 3, line 31-35). Bishop states that the deflection pattern results in a wrap having concavities along its length (see, e.g., page 3, line 35-page 4, line 4). Consequently, the surfaces of the wraps do not slide smoothly against each other and sealing is compromised. To avoid this problem, Bishop provides a method of machining a wrap that includes cutting only a part of a side face of a wrap, and repeating the cutting step multiple times to obtain a smooth finish. For example, on page 4, line 26-page 5, line 13, Bishop discloses that a method of finish machining a surface of a wrap comprises the steps of bringing a cutting tool into contact with a point on the surface of the wrap; traversing the tool in a direction tangential to the base circle whereby a strip of material is removed from the wrap over its full length; removing the tool axially from the wrap and bringing it into contact therewith at a point adjacent the first mentioned starting point and repeating the traversing step. Furthermore, Bishop, on page 5, line 33-page 6, line 6, discloses that because the tool is engaged with the wrap for a small depth compared to the depth engagement when the entire surface of the wrap is machined at once, the forces tending to deflect the wrap are greatly reduced, and the surface generated is smooth and continuous in the direction of relative sliding between the wraps.

For at least the above reasons, Applicant submits that modifying the Bishop method of

machining in the manner suggested by the Examiner would be contrary to the teachings of Bishop.

Furthermore, regarding the Examiner’s “obvious to try” assertion, Applicant submits that the Examiner fails to establish that the obvious to try standard has been met. As clearly explained in MPEP §2145, a rejection of a claim on the grounds that it would have been obvious to try the claimed subject matter is proper where the Examiner has shown that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp (*KSR*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1397 (2007)). This standard is simply not met by the mere conclusory statement provided in the Office Action. The Examiner has not shown that there are a finite number of identified, predictable solutions, and that a person of ordinary skill would have had good reason to pursue the known options within his or her technical grasp.

For at least the above reasons, Bishop would not have suggested the features as required in independent claim 14. Further, claims 15-20, 22-26, and 28-34 also would not have been suggested by Bishop by virtue of their dependencies from claim 14.

In item 7 on page 8 of the Office Action, claims 21, 27 and 35 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bishop in view of Niwa et al. (U.S. Patent No. 4, 615, 091). This rejection is respectfully traversed.

The Examiner cited the Niwa et al. reference for disclosing the surface roughness as required in claims 21, 27 and 35. However, the Niwa et al. reference provides no teaching or suggestion that would have obviated the above-discussed shortcomings of the Bishop reference. Therefore, there is no teaching or suggestion in the references of record which would have caused a person of ordinary skill in the art to modify the Bishop reference or to make any combination of the references of record in such a manner as to result in or otherwise render obvious the subject matter recited in claims 21, 27 and 35.

In view of the foregoing, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is invited to contact the Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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